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Farmer honored for yearswork with geological survey

By **CHUCK STINNETT**, Gleaner staff 831-8343 * cstinnett@thegleaner.com
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For decades, Keach's Dairy produced cream-rich milk at the Keach family's farm on Kentucky 136-West near Geneva.

"Henderson Creamery and ours were the last two in Henderson County," farmer Scott Keach recalled. His late father, Houston Keach Sr., operated the dairy with 30 employees.

"We bottled the milk in glass bottles and delivered milk 365 days a year," said Scott Keach, who has childhood memories of the operation.

Keach's Dairy closed in 1958. Yet, Keach said, "People still tell me how great it was," referring to the delicious milk produced from Guernsey and Jersey cows.

Years later, in the late 1980s or early 1990s, Keach participated in a statewide study of groundwater quality in rural Kentucky intended to assess the impact of agricultural fertilizers and other activities in groundwater quality.

"Scott's domestic well had elevated levels of nitrates," according to Glynn Beck, a hydrologist with the Kentucky Geological Survey field office in Henderson.

Nitrates in drinking water can have health consequences, particularly for infants and pregnant women. In infants, Beck said,



(Gleaner photo by Darrin Phegley ? 831-8375 or dphegley@thegleaner.com)

Scott Keach, left, talks with state geologist Jim Cobb, director of the Kentucky Geological Survey, as Keach is honored for allowing research access to his 500-acre farm.

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high nitrate intake can result in "blue baby syndrome," a condition in which an infant's blood carries insufficient amounts of oxygen to the body.

Keach contacted Henderson County Extension Agent Mike Smith, who in turn contacted the geological survey. Monitoring wells were installed on portions of Keach's farm used for livestock pastures as well as for raising row crops and alfalfa. The nitrate levels there weren't nearly as high as in the well behind his home.

"We talked to Scott and found out there was an old dairy farm that operated 50 years ago" near the well, Beck said. "We started to look at that as a possible source of nitrates from the manure" left behind by dairy cows two generations ago.

In the years that have followed, Keach has allowed the geological survey and extension service free access to his farm to conduct research and take steps to try to fix the problem. The research here could help remediate similar problems in other parts of the state.

On Wednesday afternoon, State Geologist Jim Cobb, who is director of the Kentucky Geological Survey at the University of Kentucky, traveled from Lexington to the farm to personally thank Keach and present him a plaque of appreciation.

"It's a big deal to have a landowner who cooperates to the extent you do. If we had more landowners like you, our jobs would be a whole lot easier," Cobb told Keach as the farmer's mother, Alice Lee Keach, and wife, Jennifer, looked on.

"Your participation has been monumental. Not just for the county, but (because what has been learned here) can be used elsewhere," Extension Agent Smith said.

Keach said he hasn't minded the periodic visits by geologists, hydrologists and other researchers.

"This is interesting, having these guys out here," he said. "I've always been interested in geology."

Geological survey crews years ago installed monitoring wells around the old dairy feedlot and took a series of soil cores samples. The samples were analyzed for their nitrogen and organic content.

"We determined that the most cost-effective remediation plan" was to remove the old manure-laden soil from the feedlot to stop nitrates from leaching into the sandstone aquifer 25 feet beneath the surface, Beck said.

"The (state) Division of Water said the most logical approach was to eliminate the source (of the nitrates) -- to cut off the head of the beast," he said.

So with funds from the UK College of Agriculture, crews in November 2001 removed 518 cubic yards of organic-rich soil, excavating the former feedlot to depths of one to three feet. The feedlot was refilled with native soil to the original grade.



"Then we monitored to see what we would see," Beck said.

Some improvements have been seen, as nitrate levels have dropped from 165 milligrams per liter to less than 100 milligrams.

The geological survey is still collecting data at Keach's farm, and hopes to use that information to develop computer models that will help address issues at other former feedlots.

"The reason we're interested in western Kentucky is that there are hundreds of abandoned dairy farms, so there is the potential of other sites to have this problem," Beck said.

While he's interested in the research, Keach said he isn't concerned about drinking from his well.

"Everyone remarks on how good my water is," he said.

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